

CLEAN COPY OF AMENDED CLAIMS

1. (Twice Amended) A method for fabrication of ferroelectric capacitor elements of an integrated circuit comprising the steps of:
deposition of an electrically conductive bottom electrode layer;
deposition of a layer of ferroelectric dielectric material;
annealing the layer of ferroelectric dielectric material to form perovskite phases with a first anneal;
deposition of an electrically conductive top electrode layer;
annealing the layer of ferroelectric dielectric material with a second anneal, the second anneal changing the layer of ferroelectric material into grains having a columnar structure, being performed by rapid thermal annealing and performed after the step of deposition of an electrically conductive top electrode layer;
etching the electrically conductive top electrode layer; and
annealing the layer of ferroelectric dielectric material with another anneal after etching the electrically conductive top electrode layer.

12. (Twice Amended) A method for fabrication of ferroelectric capacitor elements of an integrated circuit comprising the steps of:
deposition of an electrically conductive bottom electrode layer comprising a noble metal;
deposition of a layer of ferroelectric dielectric material;
annealing the layer of ferroelectric dielectric material to form perovskite phases with a first anneal;
deposition of an electrically conductive top electrode layer comprising a noble metal oxide; and
annealing the layer of ferroelectric dielectric material with a second anneal, the second anneal changing the layer of ferroelectric material into grains having a columnar structure, being performed in an environment comprising a mixture of oxygen and inert gas, the oxygen having partial pressure of less than five percent of one atmosphere and

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performed after the step of deposition of an electrically conductive top electrode layer.

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27. (Amended) A method for fabrication of ferroelectric capacitor elements of an integrated circuit comprising the steps of:
deposition of an electrically conductive bottom electrode layer;
deposition of a layer of ferroelectric dielectric material by a sputtering method;
annealing the layer of ferroelectric dielectric material to form perovskite phases with a first anneal;
deposition of an electrically conductive top electrode layer; and
annealing the layer of ferroelectric dielectric material with a second anneal, the second anneal changing the layer of ferroelectric material into grains having a columnar structure and performed after the step of deposition of an electrically conductive top electrode layer.

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30. (Amended) A method for fabrication of ferroelectric capacitor elements of an integrated circuit comprising the steps of:
deposition of an electrically conductive bottom electrode layer;
deposition of a layer of ferroelectric dielectric material;
annealing the layer of ferroelectric dielectric material to form perovskite phases with a first anneal;
deposition of an electrically conductive top electrode layer comprising amorphous iridium oxide; and
annealing the layer of ferroelectric dielectric material with a second anneal, the second anneal changing the layer of ferroelectric material into grains having a columnar structure and performed after the step of deposition of an electrically conductive top electrode layer.
